

STAT 245: Day 1

Stacy DeRuiter

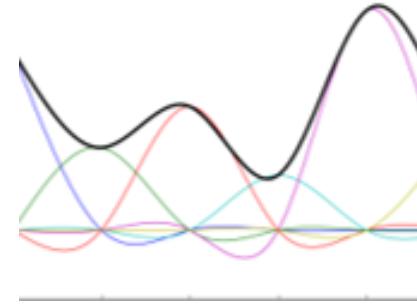
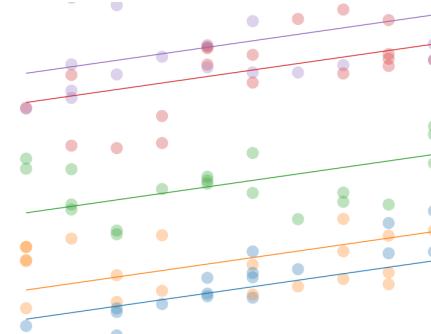
Sept. 3, 2024

Welcome!

- Choose a seat...*WISELY!*
- Consider: do you match the statement on the paper?

- Do you match the statement on the paper?
 - Add your name if yes!
- *Trade* time...
 - Collect as many names as possible
 - Trade pages as needed to leave *nobody* with a lie

Content: Regression



Content: Projects

SERVICE-LEARNING CENTER



Mission

The mission of the Service-Learning Center is to engage and equip Calvin University students, faculty, staff, community partners, alumni and other friends of the university in and for the pursuit of God's shalom. We do this by learning together, primarily through community-based service-learning, social justice activity, and civic participation in Grand Rapids and other partner communities.

ACADEMICALLY-BASED SERVICE-LEARNING



Connecting theory & practice

<https://calvin.edu/offices-services/service-learning-center>

Content: Projects

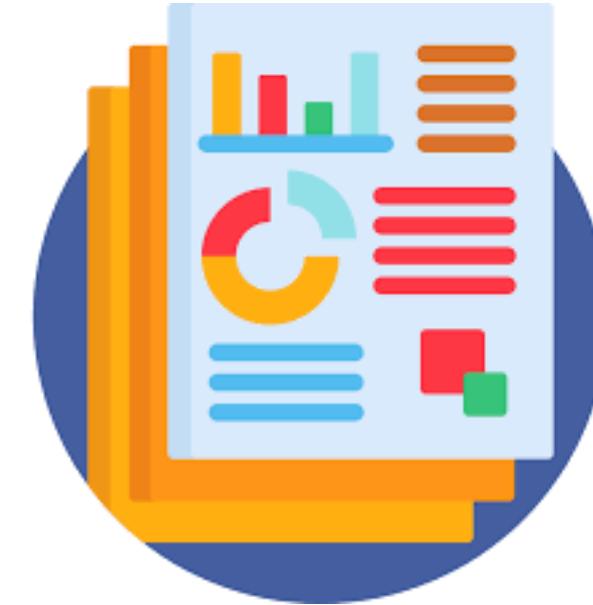
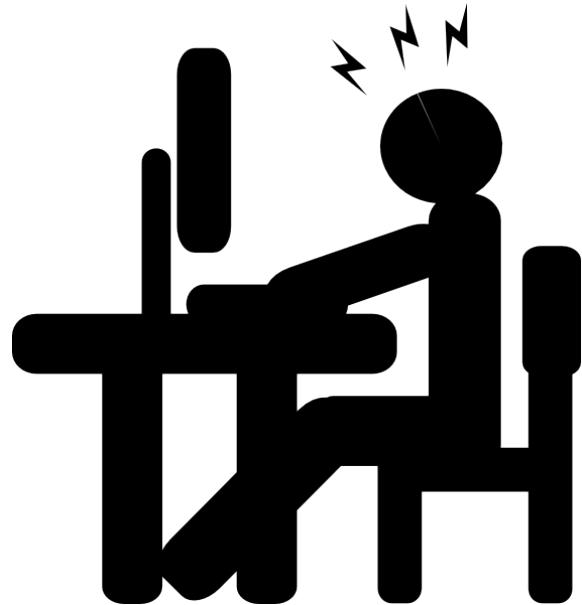


More (Global) Partners



world icon: thenounproject.com

Projects 1.0: Oops



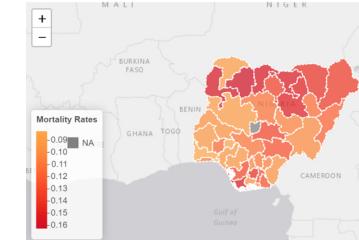
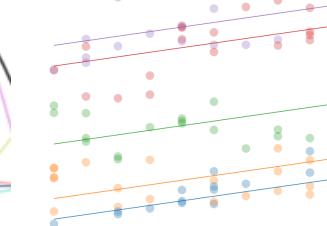
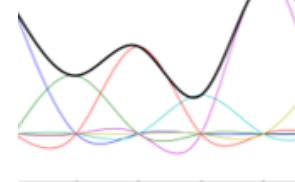
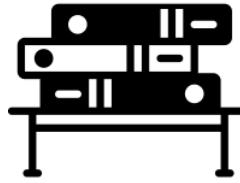
VectorStock®

VectorStock.com/26672182

icons: flaticon.com, vectorstock.com, icon-library.com

Questions and Answers

With models as reality check



Plan, Ready Data,
Pretty Figures, Models, Interactive

icons: thenounproject.com, measureevaluation.org, mfviz.com/hierarchical-models

New: Project Showcase

I N V I T E
E V E R Y O N E !



Group Work & *^!...?



R/RStudio

- r.cs.calvin.edu
- (Stand-alone install)
- Self-paced tutorials - assignment for next week

R/RStudio:

We Can Do It!



R/RStudio

- Start intro/graphics tutorials now
- Next Tuesday: Work (without me)!
- Coming:
 - More help sessions from me (TBA)
 - Study sessions: Tu/Th, NH 261, 7-9pm

RAC: Case Studies

(& Tests... & Projects...)

- 1: Graphics
- 2: Analysis
- 3: Peer Critique
- 4: Revision
- Extra: Practice + solutions often provided

Usual Weekly Schedule

- **Readings** due Tues. nights
- **Data analysis** due Thurs. nights
- In-class **Quizzes** Thursdays
- **Project milestones** weekly
- Every class will include team practice

Thursday(ish) Quizzes

- Short, Low-stakes
- Mostly in-class (perhaps Moodle too)
- Lowest 3 scores dropped
- See me if you wish to make up a missed quiz

3 Tests

- Take-home (1 week)
- Work...*together*???
- Open resource (except outsourcing)
- No late work

Final (Not-Exam)

- Project showcase 12/19. *Public!*
 - Work you did
 - Experience with partner & team
- Project revisions & reflections 12/19.
 - Not in-person

Late Homework

- Sooner is better
- Done is good
- < 48h -10%, longer -25%
- All done by end of classes April 26

**Data are People. People
(You) Matter.**

Data are People?

- Consider the "commandment" that *Data are People* alongside the [Heidelberg Catechism Q & A #6](#). Thoughts?
- Speaking from a Reformed Christian perspective, what if anything would be different about this "commandment"? Explain why, citing sources if any.

Pause

Prayers for This Time

I Corinthians 8:1-3

Now regarding your question about food that has been offered to idols. Yes, we know that "we all have knowledge" about this issue. But while knowledge makes us feel important, it is love that strengthens the church. Anyone who claims to know all the answers doesn't really know very much. But the person who loves God is the one whom God recognizes.

Prayers for this time

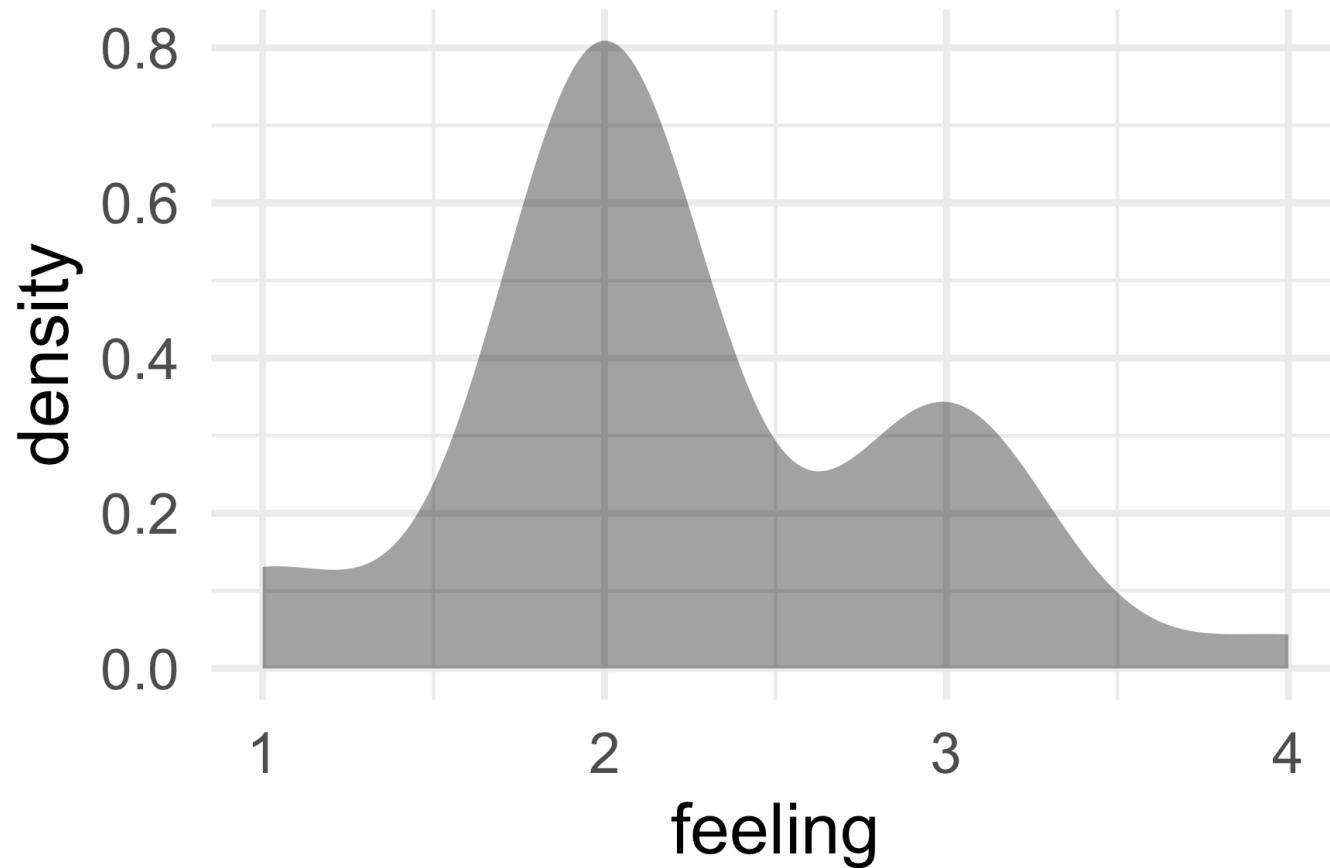
- For wisdom, focus, determination, discernment
- Energy, discipline, health of body and mind
- For stress and anxiety to stay manageable
- For ability to care for ourselves and others

Topic: Graphics

- Hint: **Notice** the graphics that I show you today!

More Survey Results

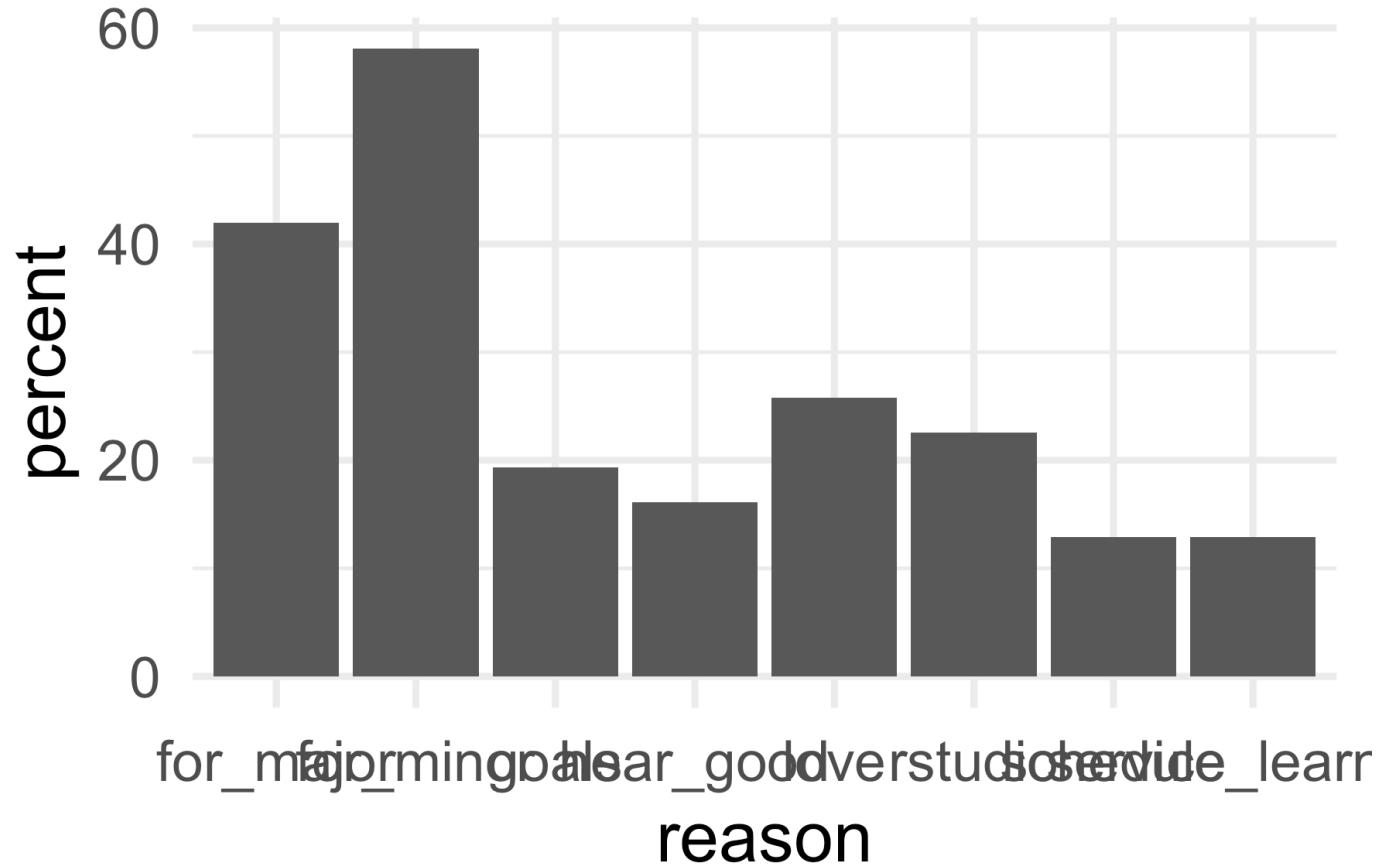
How We Feel



Feeling and Class

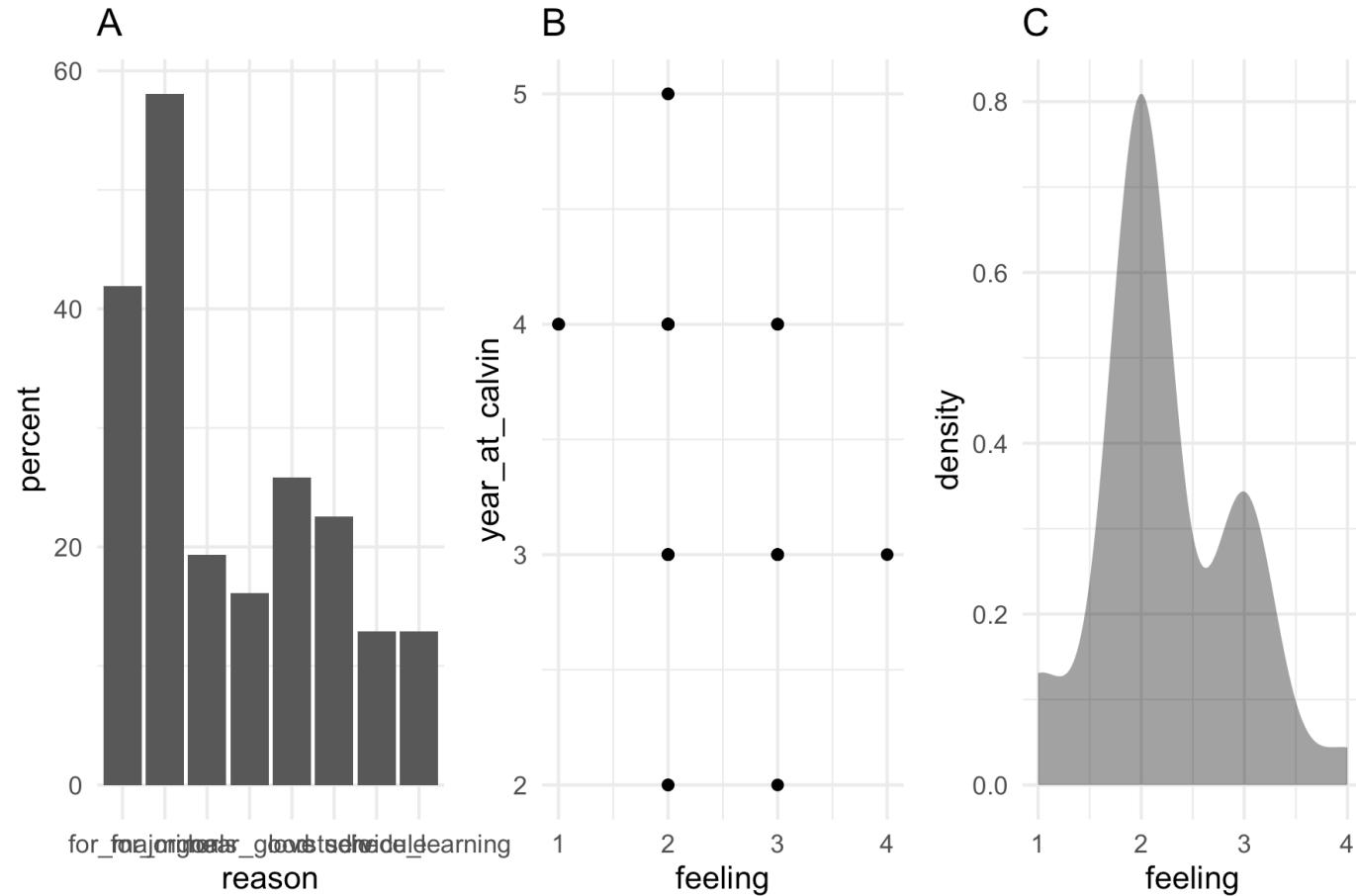


Why We're Here



What went wrong?

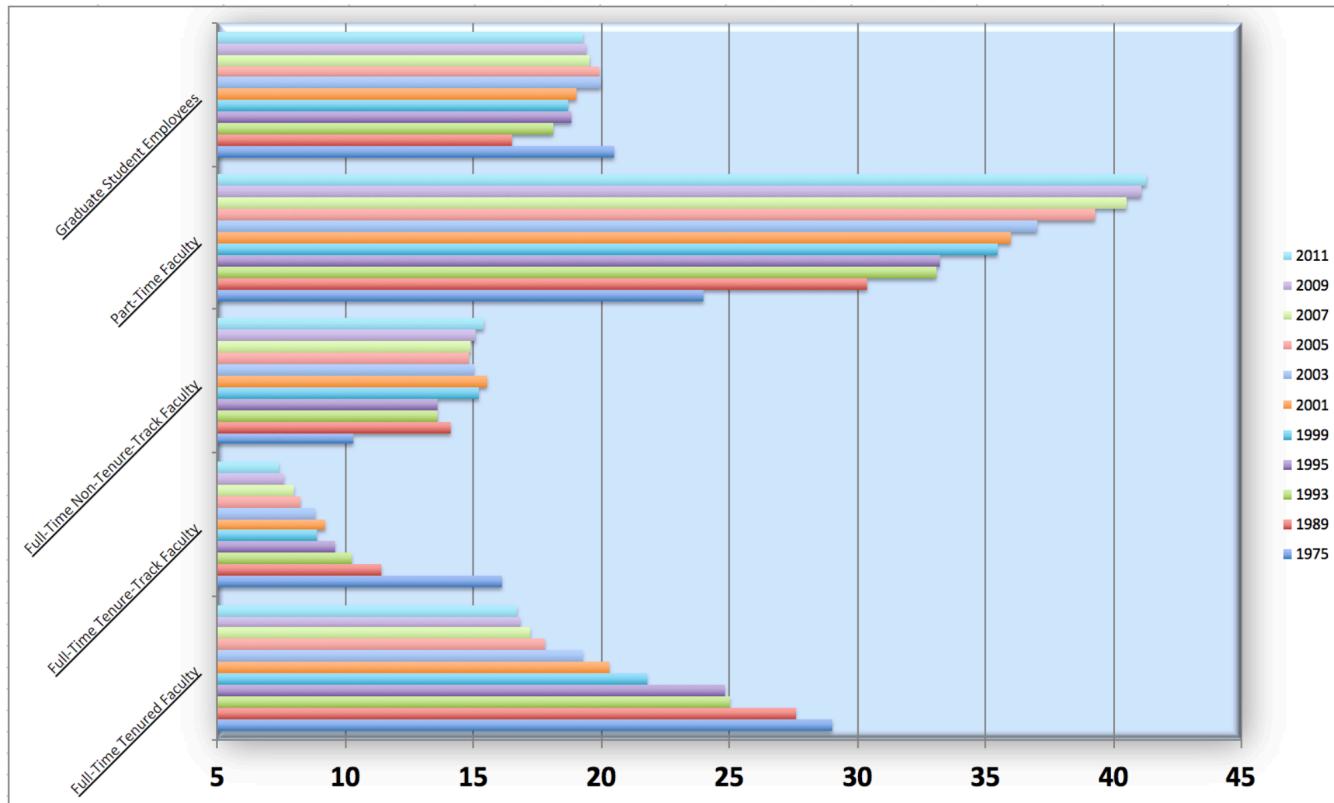
What went wrong?



Drab to Fab!

- Source:
 - Cetinkaya-Rundel and Tackett 2020
 - (free version)

What's the Point?

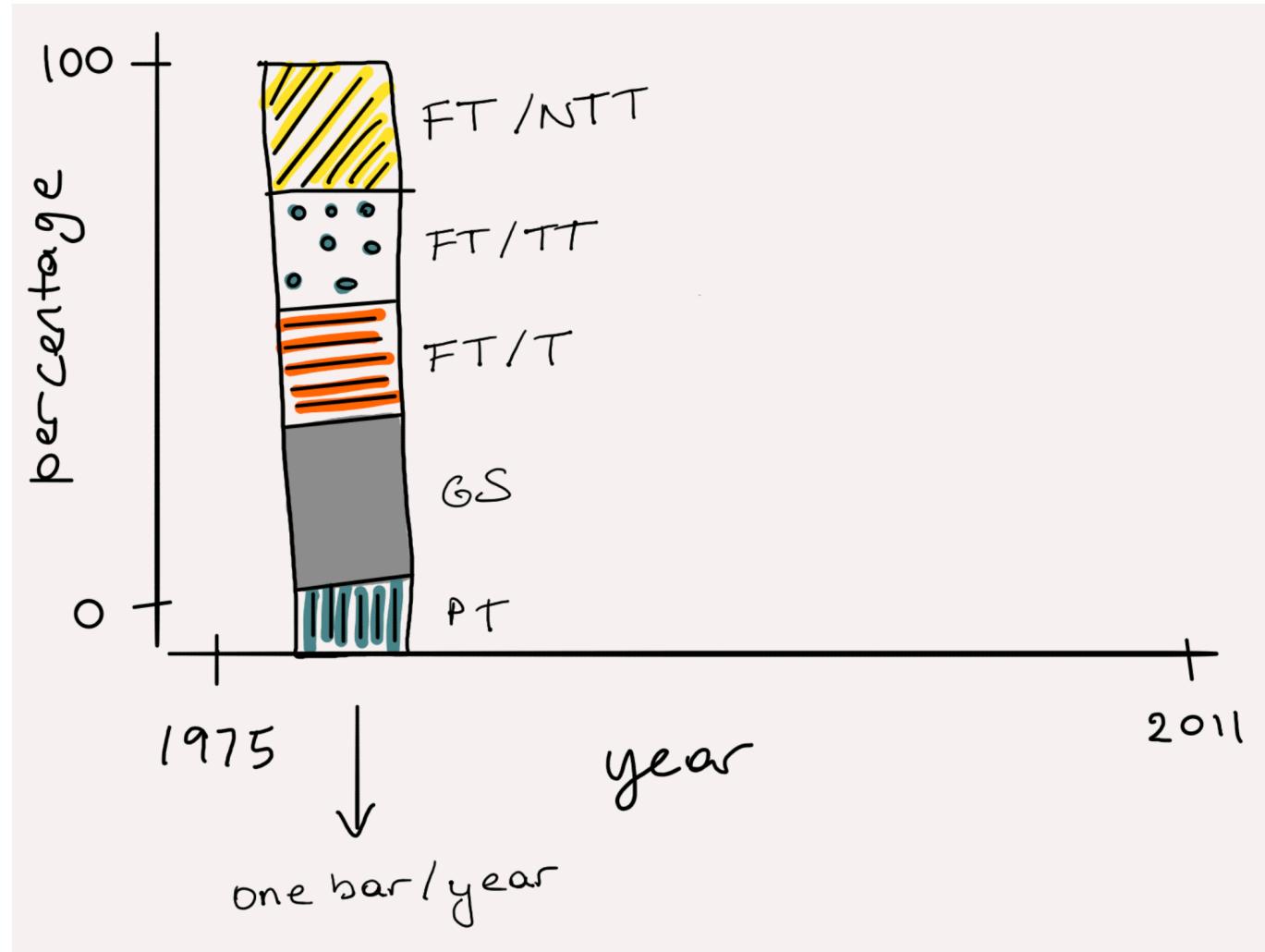


From: 2013 AAUP Report, "Trends in Instructional Staff Employment Status"

Imagine it Better:

SHOW the STORY

One idea: Stacked Bars



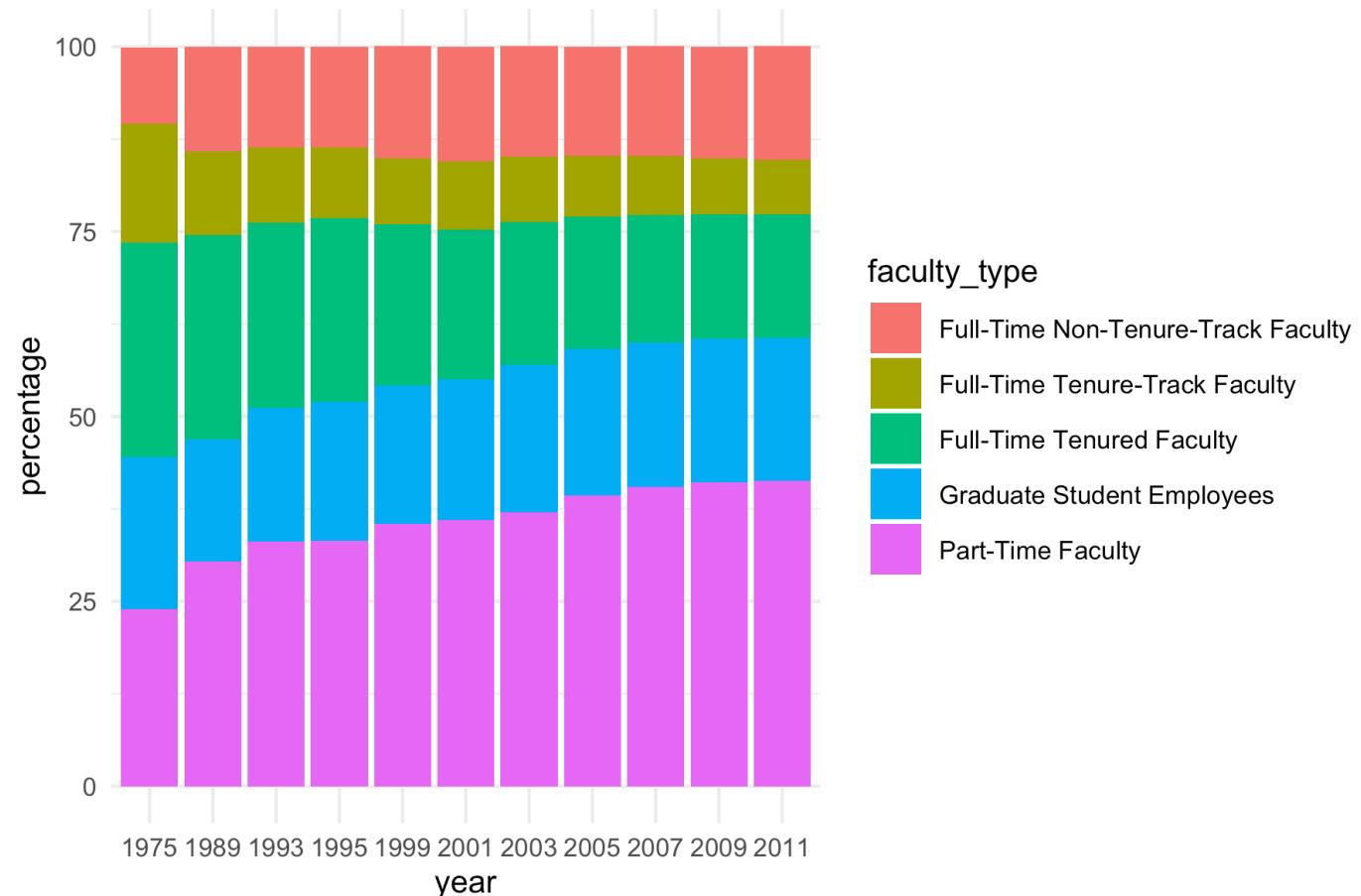
Not Yet...

- You likely *can't* replicate the example R code yet (and today won't teach you how)
- Goal: Start forming habits of thinking...
 - Get used to structure of a graphics command
 - Imagine a desired result *before* typing code
 - Think creatively about problems, causes, solutions

Stacked Bars in R

```
gf_col(percentage ~ year, fill = ~faculty_type,  
       position = 'stack',  
       data = staff_long)
```

Stacked Bars R Result



Lines?

```
gf_line(percentage ~ year,  
        color = ~faculty_type,  
        data = staff_long)
```

Lines?

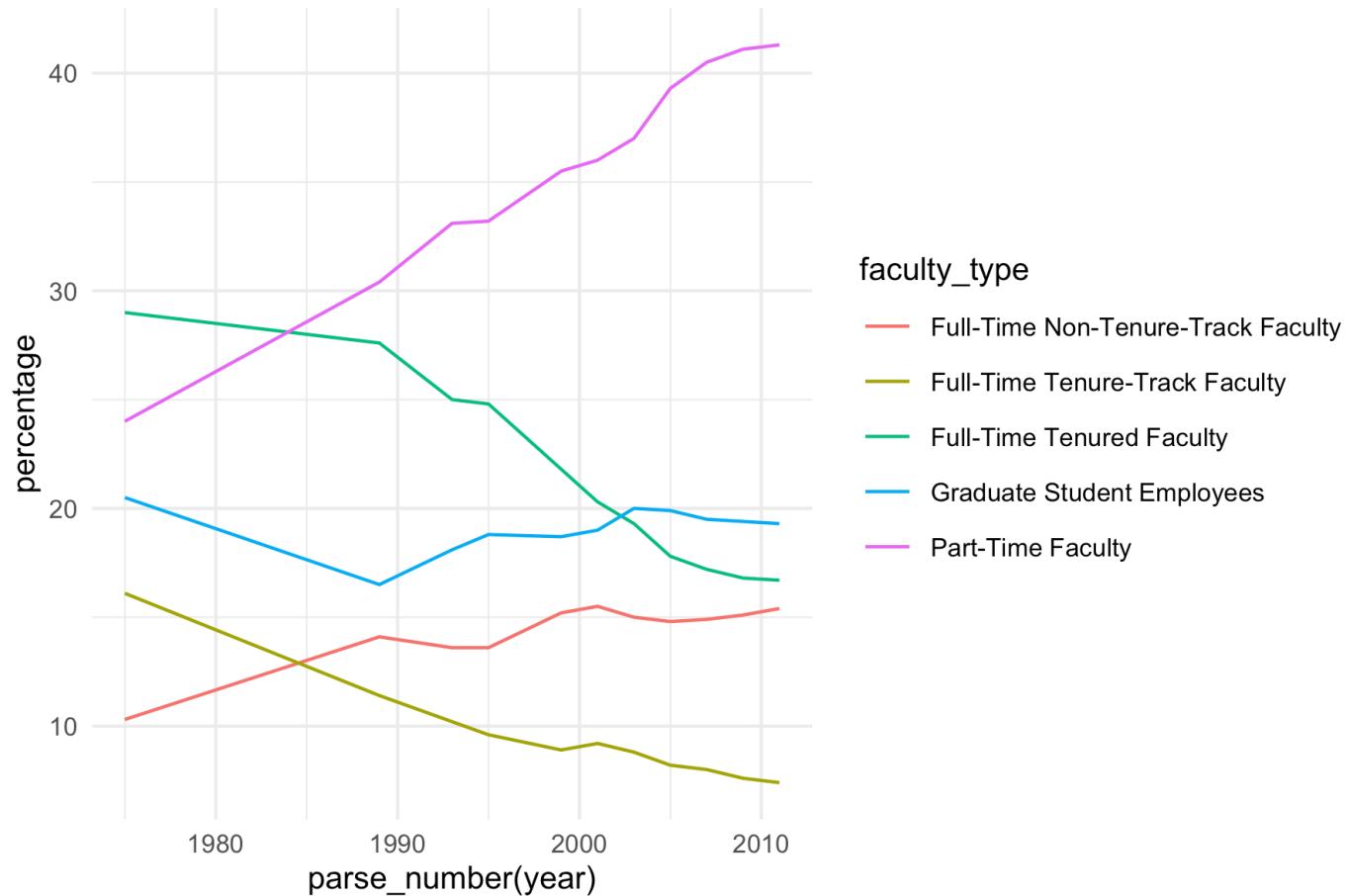


- *What went wrong? Check the X axis...*

Lines (actually)

```
gf_line(percentage ~ parse_number(year),  
        color = ~faculty_type,  
        data = staff_long)
```

Lines (actually)



Color to Highlight

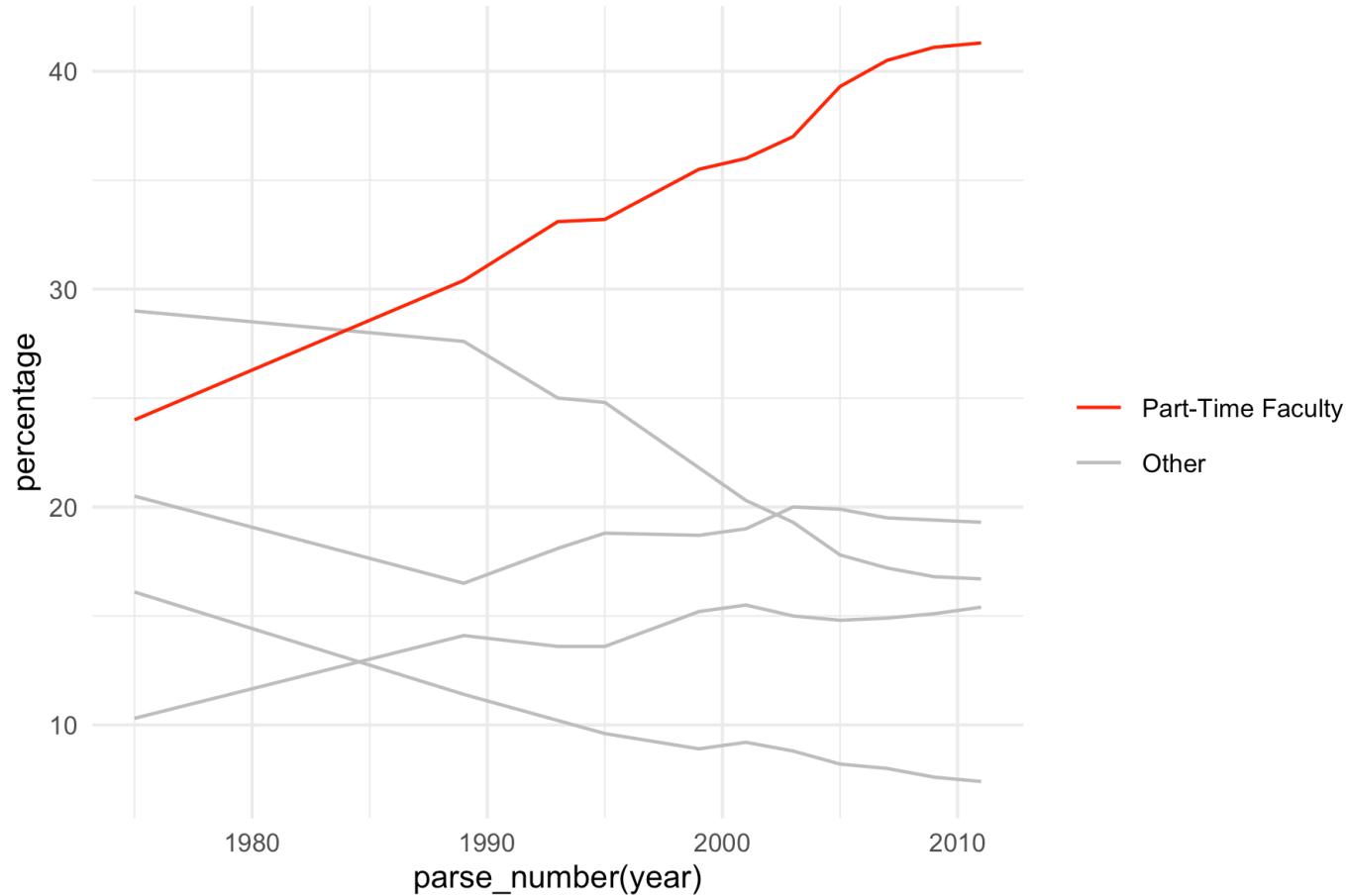
```
staff_long <- staff_long |>  
  mutate(part_time =  
    fct_other(faculty_type,  
              keep = "Part-Time Faculty"))
```

Color to Highlight

```
grey_lines <- gf_path(percentage ~  
parse_number(year),  
                      color = ~part_time,  
                      group = ~faculty_type,  
                      data = staff_long) |>  
gf_theme(  
  scale_color_manual(name = "",  
                     values = c('red', 'gray')))
```

Color to Highlight

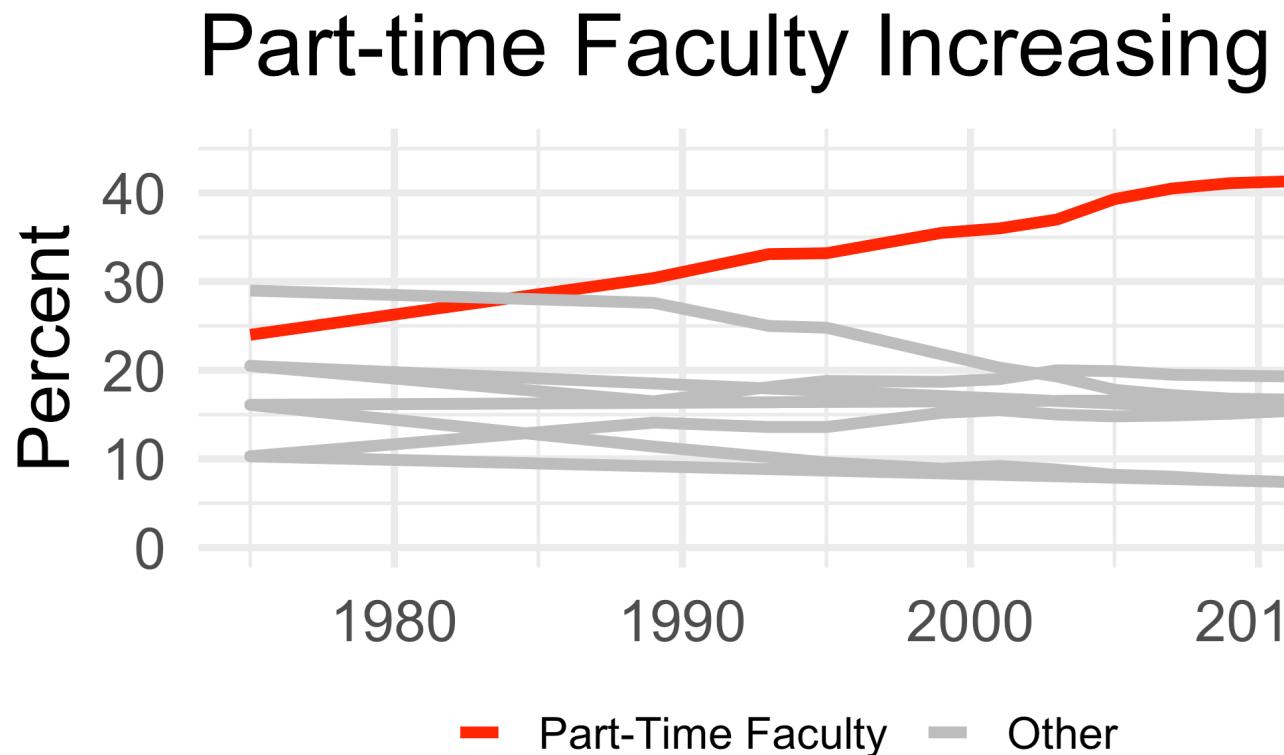
grey_lines



Better Labels

```
grey_lines |>  
  gf_labs(y = "Percent", x = "",  
           title = 'Part-time Faculty Increasing') |>  
  gf_theme(legend.position = 'bottom') |>  
  gf_lims(y = c(0,45))
```

Better Labels



Take Home Ideas

- *Think and Imagine* before you graph
- Choose a chart type that fits your data
 - Categorical: bars, pies, Cleveland dot/lollipop
 - Quantitative: histogram, density, boxplot
 - Relationships: scatter plot, boxplots, facets...
- Use color, axis limits, labels, design to tell the *story*

Go Forth...

- Today got you thinking...
- Tutorials will fill in the details...
- And give you R code tools to implement
- Next time: Constructive conversation + critique
- Next week: practice creating and critiquing

Wait a sec...

If graphs tell the whole story, why learn models??

Profiles in Stats



Mine Cetinkaya-Rundel



Maria Tackett

Profiles in Stats



Yihue Xie



Yihue Xie

Get in Touch

- Email: stacy.deruiter@calvin.edu
- Teams chat - anytime
- More contact info on Moodle
- [Outlook calendar bookings](#)

Questions?

Help

- <https://calvin.edu/offices-services/center-for-student-success/>
- <https://calvin.edu/offices-services/counseling-and-wellness/>